

CLAIMS

1. A method for use in a communications system, comprising:
initiating a real-time, interactive communication from a first communications device and providing digital content information from a user of the first communications device for transmission to a second communications device;
establishing a real-time, interactive connection between the first communications device and the second communications device during a delay time associated with establishing the real-time, interactive connection;
compensating for the delay time associated with establishing the real-time, interactive connection; and
providing the digital content information to the second communications device over the established real-time, interactive connection such that, as a result of the delay time compensation, a user of the second communications device receives and can respond to the digital content information sooner than the second device user could without the delay time compensation.
2. The method in claim 1, wherein at least one of the communications devices are mobile radio terminals.
3. The method in claim 2, wherein the delay time includes the connection set-up time and a propagation time associated with sending the digital content information from the first communications device to the second communications device.
4. The method in claim 1, wherein the digital content information corresponds to speech information or non-speech information.
5. The method in claim 1, wherein the compensating includes time-compressing the digital content information until the delay time is compensated for.
6. The method in claim 5, wherein the compensating includes determining an amount of information stored in a buffer waiting to be communicated to the second device user, and controlling the rate at which the information is played out of the buffer based on the determined amount.

7. The method in claim 5, wherein the time compression occurs at the first communications device.
8. The method in claim 5, wherein the time compression occurs at the second communications device.
9. The method in claim 1, wherein the compensating includes playing out the digital content information at an increased rate at the second communications device.
10. The method in claim 1, wherein the real-time, interactive communication is established using a server, and wherein the server is involved in the compensating.
11. The method in claim 1, further comprising:
buffering the initial digital content information,
wherein the compensating includes temporarily increasing a transmission rate of the buffered initial digital content information so that the initial digital content information is transmitted over the real-time, interactive connection faster than the initial digital content information is buffered.
12. The method in claim 1, wherein the real-time, interactive connection is a push-to-talk (PTT) connection and the digital content information corresponds to speech information.
13. The method in claim 1, wherein the real-time, interactive communication is an interactive video communication.
14. The method in claim 1, wherein the digital content information corresponds to packets each having a packet header including a playout indicator, and wherein the compensating includes modifying the playout indicator in the packets to change the rate at which the packets are played out.
15. The method in claim 1, wherein the compensating includes determining an amount of information stored in a buffer waiting to be communicated to the second device user, and controlling the rate at which the information is played out of the buffer based on the determined amount.
16. For use in a communications system that supports real-time, interactive communications, a first terminal comprising:

an actuator actuatable by a first user to engage in a real-time, interactive communication between the first terminal and a second terminal;

a buffer for storing digital content information from the first user to be sent to the second terminal;

transceiving circuitry for transmitting a request to establish a real-time, interactive connection between the first terminal and the second terminal;

a controller for determining a time delay associated with establishing the real-time, interactive connection; and

a delay compensator for compensating for the determined time delay so that a second user of the second terminal receives and can respond to the digital content information sooner than the second user could without the delay time compensation.

17. The first terminal in claim 16, wherein the delay compensator includes a time compressor for time-compressing the buffered digital content information to compensate for the time delay and for supplying the time-compressed information to the transceiving circuitry for transmission to the second device via the real-time, interactive connection.

18. The first terminal in claim 17, further comprising:

an encoder for coding the time-compressed information at an effective first rate that is less than a second rate at which the coded information is transmitted by the radio transceiving circuitry.

19. The first terminal in claim 16, wherein the delay compensator is configured to control the transceiving circuitry to transmit the digital content at a temporarily-increased transmission rate.

20. The first terminal in claim 16, wherein the controller is configured to halt operation of the delay compensator when the time delay has been compensated for.

21. The first terminal in claim 16, wherein the real-time, interactive connection is a push-to-talk (PTT) connection and the digital content information corresponds to speech information.

22. The first terminal in claim 16, wherein the real-time, interactive communication is an interactive video communication.

23. The first terminal in claim 16, wherein the digital content information corresponds to packets each having a packet header including a playout indicator, and wherein the delay compensator is configured to modify the playout indicator in the packets to change a rate at which the packets are played out.

24. The first terminal in claim 16, wherein the delay compensator is configured to determine an amount of information stored in the buffer waiting to be communicated to the second terminal user and to control a rate at which the information is played out of the buffer based on the determined amount.

25. For use in a communications system that supports a real-time, interactive communication service between a first terminal and a second terminal, the second terminal comprising:

- transceiving circuitry for receiving digital content information from the first terminal at a first rate over a real-time, interactive connection established between the first terminal and the second terminal;

- a controller for determining a time delay associated with establishing the real-time, interactive communication;

- a buffer for storing the digital content information from the first terminal at the first rate and presenting the buffered information to a user of the second terminal; and

- a delay compensator for compensating for the determined time delay so that the user of the second terminal receives and can respond to the digital content information sooner than the user could without the delay time compensation.

26. The second terminal in claim 25, wherein the delay compensator includes a time compressor for time-compressing the digital content information to compensate for the determined time delay and for supplying the time-compressed information for storage in the buffer, and

- wherein the compressed information stored in the buffer is retrieved from the buffer at a second rate less than the first rate.

27. The second terminal in claim 26, wherein when the digital content information is transmitted from the first terminal, the transceiving circuitry is configured

to receive subsequent digital content information from the first mobile radio at a third rate less than the first rate and the second rate.

28. The second terminal in claim 26, wherein when the digital content information is removed from the buffer, the controller is configured to have the buffer filled and emptied at a same rate.

29. The second terminal in claim 25, wherein digital content information includes speech information or non-speech information.

30. The second terminal in claim 25, wherein the real-time, interactive communication is an interactive video communication.

31. The second terminal in claim 25, wherein the real-time, interactive connection is a push-to-talk (PTT) connection and the digital content information corresponds to speech information.

32. The second terminal in claim 25, wherein the digital content information corresponds to packets each having a packet header including a playout indicator, and wherein the delay compensator is configured to modify the playout indicator in the packets to change a rate at which the packets are played out.

33. The second terminal in claim 25, wherein the delay compensator is configured to determine an amount of information stored in the buffer waiting to be communicated to the second terminal user and to control a rate at which the information is played out of the buffer based on the determined amount.

34. A real-time, interactive server for supporting a real-time, interactive communications service in a communications system between a first user device and a second user device, comprising:

a user device controller for assisting in establishing a real-time, interactive connection between the first user device and the second user device and determining a time delay associated with establishing the real-time, interactive connection;

transceiving circuitry for receiving digital content information from the first user device at a first rate;

a first buffer for storing the digital content information from the first user device at the first rate from which the buffered information is presented to a user of the second user device; and

a delay compensator for compensating for the time delay so that the second device user is presented with the buffered information and can respond to the digital content information sooner than the second device user could without the delay time compensation.

35. The server in claim 34, wherein the delay compensator includes a time compressor for time-compressing the digital content information to compensate for the determined time delay and for supplying the time-compressed information for storage in a second buffer, and further comprising:

a first buffer controller for retrieving the compressed information stored in the second buffer from the second buffer at a second rate less than the first rate.

36. The server in claim 35, further comprising:
an encoder for coding the time compressed information,
wherein the second buffer is a coding buffer for storing the coded information from the encoder at the first rate, and

a second buffer controller for reading out the coded information in the second buffer for transmission at a third rate less than the second rate.

37. The server in claim 36, wherein after the digital content information is transmitted from the first user device, subsequent digital content information from the first user device is received at a third rate less than the first rate and the second rate.

38. The server in claim 36, wherein when the digital content information is removed from the second buffer, a second buffer controller is configured to fill and empty the second buffer at the same rate.

39. The server in claim 34, wherein the digital content information includes speech information or non-speech information.

40. The server in claim 34, wherein the real-time, interactive connection is a push-to-talk (PTT) connection and the digital content information corresponds to speech information.

41. The server in claim 34, wherein the real-time, interactive communication is an interactive video communication.

42. The server in claim 34, wherein the digital content information corresponds to packets each having a packet header including a playout indicator, and wherein the delay compensator is configured to modify the playout indicator in the packets to change a rate at which the packets are played out.

43. The server in claim 34, wherein the delay compensator is configured to determine an amount of information stored in the buffer waiting to be communicated to the second terminal user and to control a rate at which the information is played out of the buffer based on the determined amount.

44. Apparatus for use in a communications system, comprising:
means for initiating a push-to-talk (PTT) communication from a first communications device and providing initial digital content information including speech information from a user of the first communications device for transmission to a second communications device;

means for establishing a PTT connection between the first communications device and the second communications device during a delay time associated with establishing the PTT connection;

means for compensating for the delay time associated with establishing the PTT connection; and

means for providing to the initial digital content information to the second communications device over the established PTT connection such that, as a result of the delay time compensation, a user of the second communications device receives and can respond to the initial digital content information sooner than the second device user could without the delay time compensation.

45. The apparatus in claim 44, wherein the communications devices are mobile radio terminals.

46. The apparatus in claim 45, wherein the delay time includes the PTT connection set-up time and a propagation time associated with sending the initial digital

content information from the first communications device to the second communications device.

47. The apparatus in claim 44, wherein the initial digital content information corresponds to speech information or non-speech information.

48. The apparatus in claim 44, wherein the compensating includes temporarily time-compressing the initial digital content information.

49. The apparatus in claim 48, wherein the time compression occurs at the first communications device.

50. The apparatus in claim 48, wherein the time compression occurs at the second communications device.

51. The apparatus in claim 47, wherein the means for compensating includes means for playing out the speech information at an increased rate at the second communications device.

52. The apparatus in claim 44, further comprising:
means for establishing the PTT communication using a PPT server,
wherein the PTT server is configured to assist in the compensating.

53. The apparatus in claim 44, wherein the initial digital content information is buffered, and

wherein the means for compensating compensating includes means for temporarily increasing a transmission rate of the buffered initial digital content information so that the initial digital content information is transmitted faster than the initial digital content information is buffered.